



**Figure 1. Brown bear sampling softshell clams in front of Katmai Wilderness Lodge.**



**Figure 2. Rain-washed remains of a sea otter scat providing strong evidence that the otter was probably foraging on deeply buried gaper clams and did not suffer from insufficient roughage.**

## Study Documents Important Interactions Between Clams and Charismatic Predators in SWAN Parks

By Dennis C. Lees

Bivalves constitute a critical source of nutrition for major “charismatic” predators such as bears, sea otters, many species of sea (diving) ducks and shorebirds, and a variety of invertebrates at some time during a year. For example, nursing female bears along the coast achieve more digestible energy from foraging on razor and softshell clams than on vegetation.

Clams, a dominant sedentary life form in soft beaches habitats, have a wide range of physiological tolerances, and are among the longest living animals, some species living more than 20 years. With such longevity and lack of mobility, they are good indicators of long-term conditions.

For these reasons, the National Park Service has implemented a long-term monitoring program in the Southwest Alaska Network (SWAN) to assess not only the “charismatic” species, but also the resources that support them. To assist in their planning, we examined soft sediments on beaches in three SWAN parks to provide baseline data on infaunal assemblages, especially clams and mussels. The surveys were conducted

in Kenai Fjords National Park (Kenai Fjords), Lake Clark National Park and Preserve (Lake Clark), and Katmai National Park and Preserve (Katmai). Beaches were examined using sampling techniques and visual assessments often employed on soft beaches to reveal species composition and abundance. Although the techniques provided quantitative information on clams as small as a few millimeters, the focus was on larger clams used for prey by the predators. In addition, the surveys provided considerable visual observations of ongoing or recent predation.

The survey found that soft beach habitats differed greatly within and among the parks. Habitats in Katmai range from compact sandy mud supporting softshell clams to clean fine sand supporting razor clams but include a few gravel/sand/silt beaches with littleneck clams. Gravel/sand/silt sediments with littleneck and butter

clams dominate beaches in Kenai Fjords, whereas sand beaches with razor clams or mud beaches with softshell clams dominate in Lake Clark. Generally, beaches in Kenai Fjords appear to be geologically younger than those in Katmai or Lake Clark.

A guide to the clams was produced during this program to provide assistance to visitors and NPS staff in these parks in identifying, understanding, and enjoying bivalves found in intertidal sediments (*Guide to Intertidal Bivalves in Southwest Alaska National Parks*). The guide includes brief descriptions of 29 species found during the surveys as well as comments on clam ecology, typical habitats and feeding types, and their distribution among the parks. It also includes drawings and photographs to depict the appearance of the clams and, where possible, indicators revealing their presence in the field (e.g., “shows” or scat).

### REFERENCES

Lees, D.C. 2006.

*Guide to intertidal bivalves in southwest Alaska national parks*. National Park Service. Anchorage, Alaska. NPS/AKRSWAN/NRTR-2006/02. The guide can be accessed at the following web address: [http://www.nature.nps.gov/im/units/swan/Libraries/Reports/LeesD\\_2006\\_SWAN\\_GuideIntertidalBivalves\\_630223\\_small.pdf](http://www.nature.nps.gov/im/units/swan/Libraries/Reports/LeesD_2006_SWAN_GuideIntertidalBivalves_630223_small.pdf)